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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,458	09/28/2005	Kazuo Kubota	0425-1178PUS1	3849

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EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/525,458

Applicant(s)

KUBOTA ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/24/05, 5/25/05</u> | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 9 is objected to because of the following informalities: On the third line, the words "1.0 wt. or less" should be changed to "1.0 wt. % or less." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 12 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 provides for the use of a paper quality improver but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 9 recites "...a synthetic cationic polymer (A') having a viscosity of 20 mPa-s (50°C) or more in the form of an aqueous solution (7 wt %)..." It is not clear whether the cationic polymer has a viscosity of 20 mPa-s (50°C) or more, or whether the cationic polymer in a 7 wt % aqueous solution has a viscosity of 20 mPa-s (50°C) or more.

Claim 9 does not give sufficient information to give one of ordinary skill in the art a meaningful interpretation of the claimed viscosity. Emulsions often display non-newtonian viscosity that is a function of concentration, temperature and shear rate. The conditions of measurement are required to understand the claimed value. While the first full paragraph on p 8 of the instant Specification recites the measurement conditions (Brookfield viscometer, rotor No. 2, 60 rpm), the limitations of the Specification are not read into the claims.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Honig et al (5167766).

Claims 1, 2 and 4: Honig et al discloses a papermaking additive that improves drainage and retention (paper quality improver) comprising adding to the furnish organic polymeric microbeads and a cationic starch and/or a high molecular weight polymer (Abstract). The microbeads comprise from 0-99 parts by weight of a nonionic monomer, which can be vinyl acetate (recited as a preferred monomer on p 20 of the instant Specification as an example of a vinyl fatty ester), and 100-1 parts by weight of a cationic or anionic monomer with a most preferred range of 20-80 parts by weight of each (col 6, lines 3-11 and 16-36).

Claim 3: The glass transition temperature ( $T_g$ ) of a copolymer of vinyl acetate and another monomer having a relatively high  $T_g$  can be calculated using the formula given on p 20 of the Specification. Methacrylic acid is a suitable anionic monomer (col 5, lines 66-67) and a polymethacrylic acid homopolymer has a high  $T_g$  of 228 °C (if evidence is needed, see Brandrup et al, Polymer Handbook (4th Edition), John Wiley & Sons, Table: Glass Transition Temperatures of Polymers). The  $T_g$  used for the vinyl acetate homopolymer is 32 °C as given on p 39, Table 1, No. 12 in the instant Specification. The calculated  $T_g$  of a 25 wt% vinyl acetate-75 wt% methacrylic acid copolymer is 90° C, thus the  $T_g$  of copolymers with higher vinyl acetate concentrations or having co-monomers with a lower  $T_g$  would be less than 90° C.

Claim 5: Honig et al discloses a degree of substitution for the cationic starch can be from about 0.01 to about 1.0 and preferably from about 0.02 to about 0.2 (col 8, lines 32-35) and that cationization can be achieved by treating with 3-chloro-2-hydroxypropyltrimethylammonium chloride compound (col 8, lines 43-45). Using 162 as the molecular weight of the anhydroglucose unit of a polysaccharide and 117 for the pendant ammonium group (without chloride), the degree of substitution, based on nitrogen atoms per anhydroglucose unit, can be converted to a nitrogen content of from 0.09 to 5.02 wt % and a preferred range of 0.17 to 1.51 wt %, which significantly overlays the claimed range.

Claim 6: Honig et al discloses a ratio of organic microbead:cationic polysaccharide ranging from 20:1 to 1:1000 (col 8, line 68 to col 9, line 2), which overlays the claimed range.

Claims 7-8 and 10-11: Honig et al discloses paper made by adding the organic microbeads and cationic starch or high molecular weight polymer to papermaking stock before the headbox (col 9, lines 7-18). Since the pulp sheet is formed with the microbeads and cationic starch or high molecular weight polymer integrated with the pulp, the sheet will inherently have the microbeads and cationic starch or high molecular weight polymer inside and on the surface.

Claim 12: The copolymer particles and cationic starch disclosed by Honig et al, when added to the pulp suspension, are capable of improving stiffness in paper produced from the suspension because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie*

case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent. If further evidence is needed, see *Seger et al* (6146494), col 14, lines 5-9, which teaches that starch can provide stiffness.

Claims 1-8 and 10-12 are rejected under 35 U.S.C. 102(a) as being anticipated by *Chen et al* (US 2006/0066540).

*Chen et al* discloses an emulsion comprising a siliceous material, an organic microparticle, and a cationic starch or cationic synthetic organic polymer. The emulsion is added to the fibrous suspension as a drainage and retention aid in papermaking (Abstract; p 5, pars 51-52). The cationic polymer and microparticles are each added in an amount from 100 to 2000 ppm by weight (0.01 to 0.2 wt %) based on the dry weight of the suspension (pp 5-6, pars 58-59), which overlays the claimed range as well as the claimed ratio of cationic polymer to microbead. An example is given wherein a cationic starch having a degree of substitution of 0.045 is used (pp 6-7, par 70). The degree of substitution is within the range disclosed in the rejection above, thus the nitrogen content of the starch is within the claimed range. Nonionic monomers disclosed for the polymeric microparticle include vinyl acetate, and cationic or anionic monomers include vinyl monomers (p 3, pars 31-35). The microbeads comprise from 0-99 parts by weight of a nonionic monomer, which can be vinyl acetate (recited as a preferred monomer on p 20 of the instant Specification as an example of a vinyl fatty ester), and 100-1 parts by

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weight of a cationic or anionic monomer with a most preferred range of 20-80 parts by weight of each (p 3, par 35). Thus, as discussed in the above rejection, the microparticles can have a  $T_g$  less than 90 °C. The siliceous material, organic microparticle, and a cationic starch or cationic synthetic organic polymer are added to the suspension in a papermaking process (pp 4-5, par 48; p 6, par 68), thus the paper made from the suspension has organic microparticles and a cationic starch or cationic synthetic organic polymer inside and on the surface. The organic microparticles and a cationic starch can add stiffness to the paper, as discussed in the above rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honig et al or Chen et al.

Honig et al and Chen et al do not expressly disclose that the polymer emulsion has a viscosity of 20 mPa-s (50 °C) or more in the form of an aqueous solution (7 wt %) and a nitrogen content of 1.0 wt % or less.

Honig et al and Chen et al disclose that a synthetic high molecular weight polymer, which can be cationic, can be present in the emulsion (Honig et al:Abstract; col 8, lines 23-28; Chen et al: p 4, par 44). The polymer can comprise any of the



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monomers used for the microbeads, thus can have a  $T_g$  of less than 90 °C. The polymer can comprise cationic monomers, which are amino or quaternary ammonium compounds (Honig et al: col 5, lines 25-63; Chen et al: p 4, par 44), thus the polymers can have a nitrogen content of less than 1.0 weight percent. The disclosed monomer units are vinyl-derived units. The polymer emulsion comprising a synthetic high molecular weight polymer disclosed by Honig et al is thus capable of having the claimed properties because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use a polymer emulsion with the claimed properties in the paper of Honig et al as a functionally equivalent option.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure [Honig et al (5274055), Honig (5431783), Tsai et al (6193843), Zhang et al (US 2002/0053413)]. They pertain to other emulsion systems comprising multiple copolymers and starches used in papermaking.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
DRC

  
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